Montana Board of Oil and Gas Conservation
Environmental Assessment

Operator: Brigham Oil & Gas, L.P.
Well Name/Number: Glenn 28-33 #1-H
Location: NE NE 16 T25N R58E
County: Richland **, MT; Field (or Wildcat)** Wildcat

Air Quality

(possible concerns)
Long drilling time: No, 30-35 days drilling time.
Unusually deep drilling (high horsepower rig): Triple derrick rig 1000 HP, 19,988'MD/10,445'TVD Bakken Formation single lateral horizontal well test.
Possible H2S gas production: Slight H2S gas production.
In/near Class I air quality area: No Class I air quality area.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:
X Air quality permit (AQB review)
___ Gas plants/pipelines available for sour gas
__ Special equipment/procedures requirements
__ Other:_____

Comments: Associated gas to be flared or if a pipeline is run to a gathering facility then it can be hooked up.

Water Quality

(possible concerns)
Salt/oil based mud: Yes to intermediate casing string hole, oil based invert drilling fluids. Horizontal lateral will be drilled with brine fluids. Surface casing freshwater, and freshwater mud system to be used.
High water table: No high water table anticipated.
Surface drainage leads to live water: No, closest drainages are an Fourmile Creek, about 1/2 of a mile to the west and an unnamed ephemeral tributary to Second Hay Creek, about 5/8 of a mile to the southeast from this location.
Water well contamination: None, closest water wells in the area are about ¼ of a mile to the northeast, about ½ of a mile to the southeast and ¾ of a mile to the southeast from this location. Depth of these wells range from 60' to 265'. Significantly shallower than the surface casing setting depth of 1800'.
Porous/permeable soils: No, sandy silty clay soils.
Class I stream drainage: No, Class I stream drainages nearby.

Mitigation:
X Lined reserve pit
X Adequate surface casing
__ Berms/dykes, re-routed drainage
__ Closed mud system
__ Off-site disposal of solids/liquids (in approved facility)
__ Other: _____

Comments: 1800' surface casing well below freshwater zones in adjacent water wells. Also, covering Fox Hills aquifer. Adequate surface casing and BOP equipment to prevent problems in and around freshwater drainage.

Soils/Vegetation/Land Use

(possible concerns)

Steam crossings: None anticipated.
High erosion potential: No, location will require a moderate cut of up to 14.4' and small fill, up to 4.6', required.
Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of wellsite will be reclaimed.
Unusually large wellsite: No, large well site designed as a dual well pad, 500'X500'.
Damage to improvements: Slight, surface use is cultivated land.
Conflict with existing land use/values: Slight

Mitigation
__ Avoid improvements (topographic tolerance)
__ Exception location requested
_X_ Stockpile topsoil
__ Stream Crossing Permit (other agency review)
_X_ Reclaim unused part of wellsite if productive
__ Special construction methods to enhance reclamation
_X_ Other Requires DEQ General Permit for Storm Water Discharge Associated with Construction Activity, under ARM 17.30.1102(28)

Comments: Will use existing county roads, #347 and #138. About 47' of new access road will be built into this location off existing east-west county road.. Cuttings will be solidified with flyash and buried in the lined reserve pit. Oil base invert drilling fluids will be recycled. Completion fluids will be removed and hauled to commercial Class II Disposal. The pit after solidification will be folded in and covered with subsoil. If well is not productive subsoil will be spread and topsoil will be spread on top of the subsoil. No concerns.

Health Hazards/Noise

(possible concerns)
Proximity to public facilities/residences: Closest residence about 1/4 of a mile to the northeast from this location. Town of Sidney is about 13 miles to the south southeast from this location.
Possibility of H2S: Slight
Size of rig/length of drilling time: Triple drilling rig 30 to 35 days drilling time.

Mitigation:
_X_ Proper BOP equipment
__ Topographic sound barriers
__ H2S contingency and/or evacuation plan
__ Special equipment/procedures requirements
__ Other _____

Comments: Adequate surface casing cemented to surface with working BOP stack should mitigate any problems. Sufficient distance between location and buildings noise should not be a problem.

Wildlife/recreation

(possible concerns)
Proximity to sensitive wildlife areas (DFWP identified): None identified.
Proximity to recreation sites: None identified
Creation of new access to wildlife habitat: No
Conflict with game range/refuge management: No
Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Lease Tern, Whooping Crane and Piping Plover. Candidate species are the Greater Sage Grouse and the Sprague's Pipit. MTFWP Natural Heritage Tracker website indicates no species of concerns.

Mitigation:
__ Avoidance (topographic tolerance/exception)
__ Other agency review (DFWP, federal agencies, DSL)

__ Screening/fencing of pits, drillsite
__ Other:_____
Comments: Private cultivated surface lands. No concerns.

Historical/Cultural/Paleontological

(possible concerns)
Proximity to known sites: None identified.
Mitigation
__ avoidance (topographic tolerance, location exception)
__ other agency review (SHPO, DSL, federal agencies)
__ Other:_____
Comments: Surface location is private cultivated land. No concerns.

Social/Economic

(possible concerns)
__ Substantial effect on tax base
__ Create demand for new governmental services
__ Population increase or relocation
Comments: Wildcat Bakken Formation horizontal well. No concerns.

Remarks or Special Concerns for this site

19,988'MD/10,445'TVD Bakken Formation single lateral horizontal well test. Location was constructed to accommodate a second well on the same well location. No concerns.

Summary: Evaluation of Impacts and Cumulative effects

Short term impacts expected, no long term impacts anticipated.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: May 11, 2011
Other Persons Contacted:

Montana Bureau of Mines and Geology, Groundwater Information Center GWIC website
(Name and Agency)
Richland County water wells

(subject discussed)
May 11, 2011
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County
(subject discussed)

May 11, 2011
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T28N R58E
(subject discussed)

May 11, 2011
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____
Others present during inspection:_____